



# JAG

Joint Action Group for  
Environmental Clean-Up of the  
Muggah Creek Watershed

## Remedial Options Working Group

*Coming Together is a Beginning  
Keeping Together is Progress  
Working Together is Success*



## **Our mission:**

The Remedial Options Working Group will design, develop, maintain, and oversee the implementation of a Remedial Action Plan for approval and use by JAG and its partners. In doing so, the working group will strive to complete the following goals, while subscribing to the JAG principles of environmentally sound, economically responsible, socially acceptable, health conscious and community-driven:

A. The determination of the future uses of the Tar Ponds and Coke Ovens Sites, and overseeing the implementation of this process;

B. The determination of clean-up criteria to be used for these sites;

C. The determination of appropriate remediation technologies to meet these criteria.



# Mandate

The role of the Remedial Options Working Group (ROWG) is to gather information concerning the possible options of remediation of the Muggah Creek Watershed area and overseeing the implementation of these possible options.

## Identification of Appropriate Remediation Technologies

Since its inception, JAG has received many letters from companies advertising a variety of remediation solutions. Unfortunately, JAG cannot just look at a similarly polluted site and choose the technology that was used there and assume that it will be appropriate for the cleanup of the Muggah Creek Watershed area. The reason for this is that most contaminated sites have their own unique characteristics (i.e. presence, composition and concentration of various chemicals) which may make a technology incompatible with our site.

As a result, JAG has developed a procedure by which technologies will be evaluated for potential use in a full-scale cleanup effort. These technologies will have to be field tested on contaminated watershed material before these technologies will be considered further. At present, JAG is ready to begin this technology demonstration process on the Sydney Tar Ponds portion of the Watershed because this area has been characterized during past cleanup efforts prior to the formation of JAG.

Following the site characterization the Coke Ovens site, JAG will be in a position to begin the technology demonstration process on that site. The responsibility of the ROWG is to develop a recommendation for JAG regarding appropriate cleanup technologies for use on the Muggah Creek Watershed area.

## JAG's Six Core Criteria

*The Joint Action Group, through its Memorandum of Understanding with the three levels of government have agreed that any actions of JAG will follow six core criteria. ROWG will be incorporating these criteria into its deliberations when it comes time for the selection of remediation technologies.*

**Economically Responsible:** means that ensuring that resources are used in an efficient and productive way such that the level of local economic benefits, inclusive of direct and indirect benefits, is acceptable to all Parties for the results achieved as compared with the level of costs.

**Environmentally Sound:** involve actions which support

and promote the protection, enhancement and prudent use of the environment based on sound science and engineering principles, and that the precautionary principle will be used in decision-making so that where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a basis for postponing measures to prevent and eliminate environmental degradation.

**Community-driven:** means that the direction, decisions and actions made by JAG are based on consultation, input and agreement of the wider community.

**Health Conscious:** all actions of JAG are based on sound science and recognized standards and that no such actions will be undertaken whereby the community is exposed to unacceptable health risks.

**Publicly Accountable:** the JAG process shall answer to the public, especially those in the community surrounding the Watershed; in order to do this, JAG commits to the following: (1) open meetings to the general public. (2) Accessible records in general. (3) Environmental and health risk assessments for all remedial or clean-up tasks (as prescribed by the Canadian Environment Assessment Act and the Nova Scotia Environment Act), acceptable to JAG and consistent with the legislative authority of the government parties. (4) Ongoing efforts to maximize making JAG a community-driven process.

**Socially Acceptable:** means JAG shall ensure all major decisions of JAG must be broadly understood and preferred by the citizenry of the Cape Breton Regional Municipality.

## **Remediation Technologies Defined**

*The following is a list off technologies, with an explanation of each, which have been received by the Technology Demonstration Management Consultants who have been hired by the three levels of government to carry out the Technology Demonstration Project on JAG's behalf.*

**Thermal desorption:** This technology involves heating target material to the boiling point of its various contaminants. Once vaporized and condensed, contaminants can be separated and treated. Lower temperatures are used on organics like petroleum, while hotter temperatures are applied to polycyclic aromatic hydrocarbons (PAHs) or polychlorinated biphenyls (PCBs).

**Pyrolysis:** Contaminated waste is dried, starved of oxygen and heated in a pressurized kiln or hearth to over 430 °C, which causes organics like PCBs, PAHs or dioxins to break down into gases which can be recovered and treated. What's left includes water and oil which can be treated, along with a solid residue of carbon and ash



for disposal.

**Incineration:** A widely used technology in which a fuel source and oxygen are used to heat waste material to temperatures up to 1,200 °C, sufficient to destroy contaminants, leaving ash residue and off-gases which can then be separated, treated and disposed of safely.

**Plasma:** Material is zapped with electricity, producing temperatures as high as 28,000 °C, instantly destroying contaminants. Any metals melt and then cool into a solid for recycling or disposal.

**Solvent extraction:** A solvent is used to dissolve contaminants so they can be separated from waste material. The solvent can be recycled, while the contaminants are treated and disposed of safely. This process is typically used in combination with other technologies.

**Bioremediation:** Micro-organisms naturally break down organic contaminants into harmless substances. It's a very slow process often accelerated by boosting levels of oxygen and nutrients.

**Stabilization/solidification:** Contaminated material is hardened with heat or chemicals into a mass so solid that water won't penetrate it, nor will contaminants leak out.

**Soil washing:** Contaminated material is immersed in a water-based solution with additives to dissolve or concentrate contaminants which can then be siphoned off and treated. This process works on metals, fuels and other organic contaminants. Water used in the process is treated before disposal.

**Encapsulation:** This is more than merely covering contaminated waste. A chemical sealant is injected in and all around the target material, sealing, solidifying and neutralizing the contaminants. Re-treatment may be needed if the coating wears down over time.

**Chemical treatment:** This process is used specifically on material contaminated with metals, PCBs or PAHs. Chemicals react with the contaminants and break them down to a point where they can be separated, recovered and further treated. Sometimes heat is added to speed up the chemical reaction.

## **Future Site Use**

Another focus of the ROWG is to develop (through community input) a vision as to what the Muggah Creek Watershed area could be used for following a successful cleanup. The future site use determination will set the goals for the level of cleanup. For example, industrial, commercial or parkland if achievable. Please share your vision with us!

# What is JAG?

Created in the fall of 1996, the Joint Action Group (JAG) is an innovative community-driven process: a group of individuals working together with the goal of remediating the Muggah Creek Watershed, one of Canada's most toxic sites. Beyond the original perceived need to find a solution to the Sydney Tar Ponds, JAG's mandate is much broader. It also includes the former Coke Ovens sites and the impacts of the MAID - all part of the Muggah Creek Watershed area.

JAG is comprised of local residents, business people and representatives of the three levels of government, First Nation's representatives, and youth. JAG's infrastructure is made up of several working groups 'and' standing subcommittees: Health Studies, Site Security, Public Education and Participation (PEP), Environmental Data Gathering and Research (EDGAR), Remedial Options, Governance, and, the Ethics, Planning, Financial and Human Resources subcommittees. JAG is supported by a Secretariat, managed by a Steering Committee and reports overall to a Roundtable, which is made up of some 50 members representing the community.

JAG strives to work together as one community, one "voice", merging the individual interests of all those involved for the greater good of the community.

*For more information on the JAG or the Muggah Creek Watershed Clean-Up:*

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